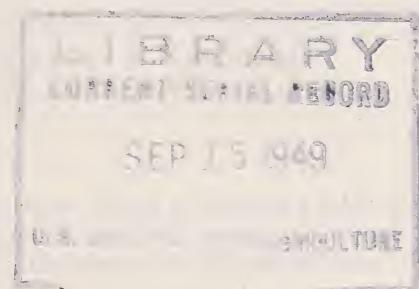


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Planning and Equipping School Lunchrooms



UNITED STATES DEPARTMENT OF AGRICULTURE
PRODUCTION AND MARKETING ADMINISTRATION

PA-60

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THIS PUBLICATION was first issued, in 1946, by the U. S. Office of Education, Federal Security Agency, as Bulletin 1946, No. 19. It was prepared by representatives of several States, members of the Cooperating Committee on School Lunches (now known as the Inter-Agency Committee on School Lunches), and other Federal consultants. The Foreword lists their names.

The supply of the bulletin has been exhausted. Because there is a continuing need by school officials in the administration of school lunch programs for the information presented, the Production and Marketing Administration of the U. S. Department of Agriculture is now reprinting the publication as PA-60.

FOREWORD

IN MANY SCHOOLS plans are under way to expand facilities to include necessary space and equipment for providing adequate school lunch programs. This publication furnishes basic materials on which school people may plan space and equipment for new school lunch programs or appraise existing programs to determine what improvements in arrangement or equipment are needed for maximum efficiency. It is directed primarily to school administrators and school lunch supervisors.

The publication is the result of group work in two conferences called by the United States Office of Education, one in 1945 and the other in 1946.

In November 1945, the Bureau of Human Nutrition and Home Economics of the United States Department of Agriculture, at the request of the Cooperating Committee on School Lunches, arranged a small conference to plan a comprehensive research program on school lunches. A subcommittee of this group working on studies needed in school lunch management recommended that consideration be given to bringing together information on layouts for school lunchrooms. To quote from this recommendation:

Not the most important problem, but perhaps the most pressing one in the field of administration is that of school lunchroom installations and construction. Some building is in progress and a great deal more is in prospect. Many costly mistakes will be avoided if there are readily available answers to the three most frequently asked questions: How much space will it take? What equipment is required? What will it cost?

No satisfactory general answer can be developed for this third question. Regional variations in cost are great and seasonal fluctuations are unpredictable. The best that can be done is to set up criteria by which an interested group can roughly compute costs of a projected construction job in their own community at a given time.

In answer to the other two questions a considerable body of material has been developed. However, this material is not readily available, it has not been inventoried and evaluated, and it has not been related to typical school situations.

It is hoped this publication will help to meet the need pointed out by the subcommittee. It represents the work of the following persons in the two conferences arranged by the United States Office of Education:

Mrs. Gertrude Bowie, assistant State supervisor of home economics, State Department of Education, Baltimore, Md.; Margaret Prentice, State supervisor of school lunch programs, State Education Department, Albany, N. Y.; Blanche Tansil, formerly in charge of institutional management, Woman's College, University of North Carolina, and school lunch consultant in summer workshops in nearby States; Helen Ward, State supervisor of school lunch program, State Board of Education, Richmond, Va.; Mrs. Margaret Dreisbach, home economist, Division of Foods and Nutrition, Bureau of Human Nutrition and Home Economics, and Mrs. Margaret Morris, nutritionist,

School Lunch Division, Food Distribution Programs Branch, Production and Marketing Administration, of the United States Department of Agriculture; Edna P. Amidon, chief, and Marie White, Federal agent, Home Economics Education Service, and Ray Hamon, chief, School Housing Section, Division of School Administration, of the United States Office of Education. Other United States Office of Education staff members who participated in the conferences were: Bess Goodykoontz, W. H. Gaumnitz, Elizabeth Harris, and James H. Pearson.

Floor plans of lay-outs in use in more than 25 school systems in 11 States were collected by the Home Economics Education Service in advance of the first Office conference. The group analyzed the layouts and formulated a series of questions indicating what constitutes "good practice" in arrangement of lay-outs; developed concrete material needed in answering the questions; and listed the large equipment needed for school lunch programs of different sizes. The group also worked with the staff of the School Lunch Division, Food Distribution Programs Branch, Production and Marketing Administration, United States Department of Agriculture, in order to insure consistency in the floor plans being prepared in that division and the standards suggested in the questions formulated by the conferees.

JOHN W. STUDEBAKER,
U. S. Commissioner of Education.

I. SUGGESTIONS FOR PLANNING AND APPRAISING SCHOOL LUNCHROOM LAY-OUTS

Basic Considerations

It is generally agreed that in preparing and serving a school lunch there are seven processes involved: (1) Receiving and storing food, (2) preliminary preparation, (3) preparation, (4) service, (5) dining, (6) dishwashing and housekeeping, and (7) managing. In addition, some provisions are necessary for the comfort and convenience of employees and to insure sanitation.

It is necessary to have space and equipment for each process. When only a few workers are employed, one space may be used for more than one process, and provisions for employees may be provided elsewhere in the school plant.

In the suggestions that follow for planning and appraising school lunch lay-outs, regardless of size, provision is made for the working space and equipment needed in carrying on each of the seven processes. The suggestions are based on the following assumptions:

1. That the school lunch is an accepted part of the school's administrative program.
2. That provision is made for a meal which meets the nutritional needs of the pupils.
3. That the lunch program provides food prepared and served under sanitary conditions and space in which it can be eaten under pleasurable conditions.
4. That the lunch program is so organized that it is part of the total educational program.
5. That, although homemaking instruction and school lunch programs in every school should be cooperative, each program should be provided with its own space and facilities.
6. That the necessary space and equipment are provided and so arranged as to permit maximum efficiency.

A few general factors in efficiency have influenced all of the suggestions in this publication and also in the lay-outs provided by the United States Department of Agriculture. These factors are:

1. Provision for space and organization for workers and diners which necessitates a minimum of crossing of paths and which permits work without confusion.
2. Provision for flow of both raw and prepared materials.
3. Equipment requirements which are based on the type of lunch to be served, retention of maximum nutritive values, length of the serving period, number of eating shifts, local situation in regard to the total year's food supply, available markets, and delivery service.
4. Ease of supervision of workers.

In making State and local plans for a school lunch lay-out, the State and local public regulations as to safety, sanitation, etc., must be met.

General Suggestions for Space and Facilities

Consideration must be given to location, ventilation, heating, acoustics, lighting, and screening in relation to the total school build-

ing. Some general suggestions in regard to these points are given below. In addition, suggestions for walls, floors, floor coverings, and storage are included, as well as for counter and dining room table tops. Some factors to be considered when it is advisable to plan for multiple use of the dining room are also listed.

Location.—The school lunchroom should be located on the first floor and accessible to a service driveway. It should be accessible to the school building by corridors, or by a covered passageway if a separate building. It should be easily accessible to the public for evening and vacation use by adults without the necessity of opening the entire school building.

Ventilation.—The lunchroom should be provided with general ventilation as installed in the rest of the building. In addition, special ventilation is usually necessary over the cooking area—a hood or other type of mechanical ventilation.

Heating.—Heating equipment should be provided to give the same temperature control that is installed for the rest of the building, and with special cut-offs or valves for the lunchroom so that the space may be used at times other than during regular school hours.

Acoustics.—Since informality should be encouraged in the lunchroom, special attention should be given to sound-absorbent treatment. Acoustical fiber tile on the ceilings of dining areas will usually provide the desired degree of quietness. If the dining area is used for other purposes after lunch, it should be separated from the kitchen area by soundproof doors and partitions.

Lighting.—Both dining and working areas should be provided with good lighting, both natural and artificial. Light-colored ceilings and upper walls, cleaned or painted frequently, will make the rooms lighter and more cheerful. Since lunchrooms are often used for other school purposes—in some cases even as library reading rooms—they should be as well lighted as classrooms. There should be 10 foot-candles of general illumination in the lunchroom with 20 foot-candles on all tables and working areas. Special attention should be given to the lighting arrangements of the kitchen so that workers will not stand in their own light.

Screening.—All windows and doors for kitchen and dining room should be screened. Down-draft fans at the doors are desirable.

Space for garbage and trash before disposal.—Adequate and convenient provisions should be made for kitchen and table wastes. The methods of disposal will determine the need for separate containers for sorting wastes. Wastes are usually sorted in four groups: (1) That which can be burned in the furnace or in a yard incinerator, (2) tin cans for salvage, (3) noncombustible trash, and (4) wet garbage. The last two groups are usually transported to public dumps and incinerators.

Provisions should be made in the kitchen for garbage cans. There should also be provided a flyproof enclosure adjacent to and level with the service platform where the cans may be held until the garbage is removed. This enclosure should have a hard cement floor, floor drain, and hot-water connection for washing cans. Space must be provided for empty containers and trash until disposal.

Walls.—*Kitchen work areas and service space.* Walls should be light in color, smooth, impervious to moisture, and easily cleaned.

This is especially necessary for the wainscoting, and is desirable to the full ceiling height. Glazed structural tile or glazed brick is preferable, but waterproof hard plaster is acceptable.

Dining area. Walls should be light in color and easily cleaned. Glazed structural tile, glazed brick, painted hard plaster, or wood paneling are satisfactory for wainscoting. Plaster is probably the most satisfactory for upper walls. Picture molding is desirable. If wainscoting is of any material other than glazed tile or brick, chair rails may be needed. Cinder blocks are acceptable in some localities if laid with good smooth surface and painted.

Floors and floor coverings.—A reinforced concrete slab with a ventilated area below is the most satisfactory basic structure for lunchroom floors, especially in the kitchen and work areas. Wood, rubber tile, or linoleum coverings are not satisfactory on a concrete slab unless there is air circulation below the slab. Asphalt tile is satisfactory on a soil-bearing, waterproofed slab, provided it is not cleaned by flushing with water. It is common practice to use wood-joist floor construction in the smaller one-story schoolhouses; when used, the space below should be well vented. The best floor covering for wood-joist construction is hardwood, but asphalt tile or linoleum is reasonably satisfactory if properly laid over smooth wood floors. Masonry floor coverings—such as terrazzo, quarry tile, and specially hardened and colored cement—are durable and sanitary if laid on concrete slabs, whether vented or not. Slipperiness can be overcome by the use of abrasive materials in the surface.

Often it is a problem to know what to do with old unsatisfactory floors. Conditions vary so widely that no general recommendations will suffice for all cases. State departments of education and local authorities should be consulted on special cases. Perhaps the most common unsatisfactory condition is the cheaply built cement floor. It does not wear well, produces dust, and is difficult to clean. If the base is substantial, probably the best solution is a new specially treated cement covering at least an inch thick, or asphalt tile. Some hardwood floors can be restored by sanding and refinishing with seals and wax. Badly worn softwood floors, if dry and vented, may be sanded to a smooth surface and then covered with asphalt tile or linoleum; or a new hardwood floor may be laid over the old floor. Dry rot or termites often destroy wood floors laid on soil-bearing concrete slabs. If it is not practicable to vent below the slab, the best solution is to replace the wood floor with asphalt tile or a masonry finish.

Under proper conditions, the following floor coverings have proved to be the most satisfactory—

For kitchen and work areas:

- Quarry tile.
- Terrazzo (with abrasive finish).
- Grease-resistant asphalt tile.

For dining area:

- Asphalt tile.
- Linoleum.
- Rubber tile.
- Waxed hardwood.

Cement and masonry floor coverings are unsatisfactory for dining areas, and soft flat-grain wood floors are unsatisfactory for any school area.

Water connections.—Hot and cold water connections should be provided with mixing faucet at all sinks and lavatories. Provision should also be made in the kitchen area for both hot and cold water hose connections.

Water heaters.—Even where hot water supply is available, it is seldom of sufficiently high temperature to meet sanitary regulations for dishwashing. Special water heaters and storage tanks are usually required. Such facilities should be provided with safety devices and located near the kitchen.

Mechanical equipment.—Where there is a great deal of mechanical and electrical equipment, such as motors and refrigeration units, it is desirable to install it in a separate equipment room accessible to the kitchen.

“Steam table.”—Actual steam tables such as are used in some commercial cafeterias have live steam coils for heating. This type of service counter is seldom justified in school lunchrooms. Pans of water heated by gas jets for food container insets are satisfactory for school lunchrooms, and even this is not essential for small school lunchrooms where the food is served quickly after being removed from the cooking units.

Counter tops.—The most satisfactory material for counter tops is stainless steel. Tempered pressed-wood with waterproof and heat-resistant finish and properly edged with wood or metal is a fair substitute.

The dining room.—Total space for dining should be determined on the basis of the number of persons to be seated at one time. Nine to twelve square feet of dining-room space is the usual allowance per person. In planning for new school buildings which will include large school lunch programs, consideration should be given to the advisability of having several dining rooms serviced from the same kitchen rather than one large dining room.

Tables and chairs.—Tables seating four, six, or eight persons are considered very desirable. Eighteen to twenty-four inches of linear table space should be allowed for each person. Recommended table sizes for school are: Square table 36 by 36 inches; and oblong tables ranging in length from 6 to 8 feet and in width from 30 to 36 inches. The type of tables used will depend on the number to be seated and the method of serving. When trays are used, table space should be sufficient to provide for them. Table heights should vary with the size of the children to be served. Chairs should be of the size and type that permit children to be comfortable and in the right position at table.

The National Bureau of Standards recommends tables of the following heights for school use: 20, 23, 26, and 29 inches; with chairs 11, 13, 15, and 17 inches, respectively.

Dining table tops.—Hardwood, linoleum, or tempered pressed-wood properly edged with wood or metal are satisfactory. Satisfactory plastics are also available.

Multiple use of dining room.—If the dining room is to be used for other activities, portable tables and folding chairs may be used.

Many schools report using the dining room for other activities. Among the uses which have been found satisfactory are: Overflow reading room, club room (except for dancing), overflow art activities, music room, elementary school playroom, community groups. Less satisfactory uses are assembly and light recreation. When the dining room is to be used for purposes other than dining, the walls and floors must be finished with the needs of the special purpose in mind.

Other considerations.—It is desirable to have the dining room separated from the serving unit.

The soiled dish disposal unit should be located in such a way that there is no interference with the line being served.

The main passage aisle should have at least a 3-foot clearance.

A satisfactory space should be provided for wraps and books.

For ease of passage, tables should be arranged to provide an aisle at least 18 inches between backs of chairs when children are seated.

Facilities for cool drinking water should be provided in every dining room. The minimum requirement is a water cooler where ice is used, or a self-contained electric unit. A wall type cooler or fountain takes up less space in the dining room. This type faucet may also be installed in the counter. Shelves should be provided for glasses wherever drinking water is available. Glasses are more easily dispensed from the baskets in which they were sterilized.

Storage.—In small lay-outs a single-door storeroom is desirable. Shelving, platforms, bins, and other storage containers should be provided above the floor level for storing food properly, to make the food easily accessible, to protect it, and to make it easier to clean the room. In some States this is required by State regulations.

Storage space for food should have these additional characteristics: Be mouse- and rat-proof; have proper lighting; be ventilated by louvers or mechanical means; be protected from theft by doors and windows which can be securely locked; and have entrances which are visible from the kitchen.

Those schools whose year-round plan for food requires storage of a large supply of food will need to provide storage space to meet their particular needs. The location of this storage space will vary to meet local needs and may be outside the school premises, such as in a locker plant.

Questions for Use in Planning and Appraising School Lunch Lay-Outs

The following questions constitute a checklist for evaluating lunchroom plans. Affirmative answers indicate good planning. The standards for evaluation are contained in the foregoing sections of part I of this bulletin and in part II.

I. Receiving and Storing Food, Supplies, and Equipment

A. Food

1. Is there a protected platform or other definite space and facilities for unloading and receiving supplies?
2. Is the receiving space adjacent to the storeroom? To the kitchen?
3. Is the food storage space separate from the kitchen? Located adjacent to the kitchen?

4. Is the food storage space sufficient for the period between deliveries of:
 - (a) Canned foods? (c) Foods requiring refrigeration?
 - (b) Staple foods? (d) Root vegetables and fruits?
5. Is the food storage space free of motors, compressors, ventilating ducts, heating and water pipes, and other undesirable structural features?

B. Other supplies and equipment

1. Is there separate storage space for supplies other than foods, such as paper products?
2. Is there space for storing equipment which is used only occasionally in the kitchen or dining room?

II. Preliminary Preparation of Food

1. Is there space for carrying out the necessary processes in the preliminary preparation of food?
2. Is the preliminary preparation space separate from the cooking center? From the pot and pan washing and the dishwashing centers?
3. Is the space for preliminary preparation located—
 - (a) Near the food entrance and storage room?
 - (b) On a direct route to the cooking center? To the salad table?
 - (c) Near the refrigerated holding space?
4. Does the arrangement of equipment provide for orderly sequence of preliminary food preparation processes?
5. Does the space and equipment for preliminary preparation of fruits and vegetables include—
 - (a) A place on which to set containers?
 - (b) At least two sinks (or tubs) with drainboards or table surface for sorting and washing?
 - (c) A hardwood table surface or space for a cutting board used in trimming and cutting?
 - (d) A place for peeling or a mechanical peeler adjacent to a sink or emptying directly into one?
 - (e) Refrigerator space for holding fruits and vegetables after preliminary preparation until needed?
6. Does space and equipment for preliminary preparation of meats include—
 - (a) Table surface for cutting meats? For dressing chickens?
 - (b) Equipment for grinding meat? For slicing meat?
 - (c) Refrigerator space for holding meats before cooking?

III. Food Preparation Unit

A. Meat and vegetable cookery

1. Is the meat and vegetable cookery center near the pre-preparation unit?
2. Is the meat and vegetable cookery center located near the serving unit or where passage to it is easily made?
3. Does the equipment for cooking vegetables, meats, and other hot dishes include—
 - (a) A range with oven sufficiently large and sturdy enough to hold the necessary containers for cooking meat and vegetables?
 - (b) A deck oven?
 - (c) A steam cooker (under pressure) or pressure cooker?
 - (d) A steam-jacketed kettle?
4. Is the equipment for meat and vegetable cookery grouped for orderly sequence in preparation?
5. Does space and equipment for meat and vegetable cookery include—
 - (a) A cook's table of the size specified in the "equipment lists?"
 - (b) Is the cook's table located in front of or next to the range?
 - (c) Is there sufficient pot and pan storage—rack over table, shelf under table, or a movable truck?

- (d) Does the cook's table have space for seasonings and other adjuncts?
- (e) Is there auxiliary equipment such as slicer, cutter, mixer?
- (f) Are they placed so that they can be used by workers in other units?
- (g) Is there a cook's sink or running water at the range or cook's table?
- 6. Is there provision for holding cooked foods at proper temperature?

B. Baking

- 1. Is there separate working space for the preparation of baked foods?
- 2. Does the equipment for baking include—
 - (a) A table of the size specified in the "equipment lists?"
 - (b) Bins for supplies?
 - (c) Space for small equipment?
 - (d) Sufficient oven space for baking?
- 3. Is the equipment grouped for efficient use?

C. Salads and other cold foods

- 1. Is there a table for this work of the size specified in the "equipment lists?"
- 2. Does the table have—
 - (a) A hardwood top?
 - (b) Space for workers' tools?
- 3. Is this center convenient to the—
 - (a) Serving unit?
 - (b) Refrigerator?
- 4. Is there suitable space for holding salads and other cold foods prior to serving?

IV. Serving Unit

A. Location

- 1. Is the lunchroom entrance for pupils near the serving unit?
- 2. Does the arrangement for serving the food permit easy access to the dining room?

B. Facilities

- 1. Is there a suitable place from which to serve the food?
- 2. Is there space for trays, napkins, flatware? A place for the supply of dishes used in serving?
- 3. Is there a tray rail?
- 4. If serving is from a counter, is the space in front sufficiently wide for pupils to move easily?
- 5. Is a convenient place provided for the checker?

V. Dining Unit

A. Location and arrangement

- 1. Can the dining unit be completely separated from the kitchen?
- 2. Can the soiled dishes be delivered to the dishwashing center in such a way that there is no interference with the line being served?
- 3. Are the entrance and exit for pupils so located that there is no interference with the line being served?

B. Space and facilities

- 1. Does the arrangement provide for the number of pupils who need to eat at one time?
- 2. Are the tables and chairs such that they permit the pupils—
 - (a) To be seated comfortably?
 - (b) To practice desirable social behavior?
- 3. Does the placement of tables and chairs provide sufficient space for passage?
- 4. Are shelves and hanging space provided in or near the dining room for books and wraps that must be brought to the lunchroom?

VI. Clean-up Unit**A. Dishwashing**

1. Is the center for dishwashing adjacent to the dining room?
2. Is space provided for—

(a) Receiving?	(g) Rinsing?
(b) Scraping?	(h) Sanitizing?
(c) Disposing of waste?	(i) Draining and air drying?
(d) Stacking dishes, trays, bottles, flatware?	(j) Stacking clean dishes?
(e) Pre-rinsing?	(k) Storing?
(f) Washing?	
3. Is a 3-compartment sink with dish baskets provided; or is there a dishwashing machine, properly installed, for washing, rinsing, and sanitizing?
4. Does the provision for hot water meet the minimum standards of the State and local health departments for rinsing and sanitizing dishes?
5. Are sufficient dish baskets or racks provided to permit air drying?
6. Is space provided for storing baskets or racks when not in use?
7. Is space provided for storing detergents and other supplies for dish washing?

B. Pot and pan washing

1. Is space provided for holding, washing, rinsing, and sanitizing pots and pans?
2. Do facilities permit the washing of pots and pans as needed?
3. Is this space adjacent to the cooking unit?

C. Housekeeping

1. Is separate space provided for—

(a) Brooms?	(b) Mops?	(c) Mop buckets?	(d) Cleaning supplies?
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2. Is this space ventilated sufficiently for drying wet mops?
3. Is there a place at the soiled dish table for collecting garbage?
4. Is there space for a garbage container at the preliminary food preparation unit?
5. Has a flyproof place outside the kitchen been provided for holding garbage if daily disposal is not possible?
6. Is there a place to keep empty containers and trash before removal?

VII. Manager's Office Space

1. Is there a desk for the manager?
2. Is the manager's desk located in the lunchroom? Is it in a place where supervision can be given?
3. Does the manager have a place to keep records?

VIII. Provision for Employees

1. Are there facilities, other than the sink, in or adjacent to the kitchen for hand washing?
2. Is there a place, other than the kitchen and storeroom, for changing clothes? For keeping personal belongings?
3. Are there toilet facilities for employees only?
4. Are employees' toilet facilities conveniently located?
5. Is there a first-aid kit in the kitchen?

**Availability of Lay-Outs Recommended for School Lunch
Programs of Various Sizes**

The United States Department of Agriculture has developed floor plans for school lunchrooms based on efficient use of equipment necessary for the preparation and serving of a complete lunch. The plans include the arrangement of equipment for the kitchen and dining areas for programs ranging from the small school serving 75 pupils to the

large school serving as many as 500 lunches daily. Requests for the floor plans should be made to the United States Department of Agriculture, Washington 25, D. C. The plans are on separate sheets. In ordering, specify the approximate number of lunches served daily.

II. EQUIPMENT NEEDS AND SPACE CONSIDERATIONS FOR SCHOOL LUNCH PROGRAMS OF DIFFERENT SIZES

The equipment listed under "minimum requirements" is in many cases far above that now found in school lunchrooms. It is recognized that in the majority of school lunchrooms it was necessary to adjust to improvised space and equipment during the war years. Few were able to meet good sanitation and efficiency standards during wartime. The minimum now in use, therefore, should be raised.

The minimum requirements given on pages 9-19 are considered necessary in preparing and serving *complete* meals to the *upper limit in each school group*. Schools should strive to supply required items and additional ones that are needed in certain situations.

A modification of equipment needs for numbers to be served will be necessary when all or most of the children are in the lower elementary grades and when less than a complete meal is served. For example, in a school serving 200 elementary grade children, a complete meal could be prepared with the equipment listed for the 150 level—in other words, there is no hard and fast rule where one level ends and another begins. The basis for decision is the *menu* and the *quantity of food* to be prepared. It is necessary that all equipment items be provided to insure good management practices and a high standard of sanitation.

Schools Serving 75 to 150 Persons

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS		
Ranges, ovens, etc.		
Range-----	A 1-section heavy-duty range with oven; or a 4- to 6-burner institutional stove with 1 or 2 ovens.	
Ovens-----		A small 2-deck oven.
Steam cooker-----		A 1-compartment steam cooker; or 1 or 2 steam pressure cookers, 20-quart size.
Sinks, etc.		
Sinks-----	A 3-compartment sink, each compartment 18" x 18" x 14" deep, with metal dish tables attached (see sizes given below).	

Schools Serving 75 to 150 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS—continued		
<i>Sinks, etc.—Continued</i>		
Hand basin-----	One 15" x 12"	
Mop sink-----	One 24" x 20" x 14" (provided there is no janitor's sink near).	
<i>Dish machine</i> -----		Single tank size with racks 16" x 16". If machine is used, the 3-compartment sink may be replaced by a 2-compartment sink with drain board for vegetable preparation and pot washing.
<i>Refrigerators</i>		
Refrigerator-----	20 cubic feet (48" x 30" x 70").	Up to 45 cubic feet.
Ice cream cabinet-----		5- to 10-gallon capacity.
Frozen food cabinet-----		And/or as needed.
<i>Tables</i>		
Receiving table ¹ -----	3' x 18", 28" high-----	Up to 6' and salad table or bakery table up to 6'.
Cook's table-----	5' x 30", 36" high-----	Up to 15 square feet.
Soiled dish table-----	10 square feet (5' x 24")-----	Up to 10 square feet.
Clean dish table-----	8 square feet (4' x 24")-----	
<i>Counter, etc.²</i>		
Counter-----	6' long x 24" wide-----	Up to 12' long x 30" wide, which will make room for hot and cold units. May need a separate table for trays and silver and one for cashier's use.
Tray rail-----	6' long x 12" wide (if trays are used).	Length of counter.
<i>Truck</i> -----		As needed—30" x 22" x 28", with 2 shelves.
<i>Kitchen machines</i>		
Mixer-----		12-quart size.
Mixer table with storage cabinet underneath.		18" x 24", 28" high.
<i>Storage</i>		
Dish cabinets-----	Under counter, preferably closed with sliding doors.	
Pots and pans-----	Shelves under and over cook's table. Pot hooks.	
Small equipment-----	Table drawers, two 20" x 20" x 4".	Up to 4 drawers.
Dish baskets-----	Shelf under clean dish table.	

See footnotes at end of table.

Schools Serving 75 to 150 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS—continued		
<i>Storage</i> —Continued		
Paper goods-----	Shelf or cabinet space, 3 square feet.	
Soaps and cleaners-----	Separate space, 3 square feet.	
Staple food supplies-----	Separate storage room, 40 to 50 square feet with shelves, wire mesh bin and cans on portable platform. ³	Up to 80 square feet.
<i>Small equipment and tableware.</i>	See list available from your State Department of Education; and <i>School Lunch Management</i> (Nutrition Education Series, Pamphlet No. 3, U. S. Office of Education. For sale by Superintendent of Documents, Washington 25, D. C., 10 cents).	
<i>Manager's desk, etc.</i>		
Desk-----	27" x 20", with at least 1 file drawer.	
Chair-----	1-----	
Stool-----	1-----	
HOT-WATER FACILITIES	See statement in general suggestions, page 4, and plan space as needed.	
REST ROOMS -----	Lavatory, toilet, and locker facilities to accommodate workers. (Provide if no rest room is near.)	
SPACE CONSIDERATIONS	<p>Minimum space for serving 150 based on the minimum facilities will require about 243 square feet; or a room 22' x 9', plus 45 feet storage. This makes 1.62 square feet per person served.</p> <p>Ample space for including additional facilities that would be desirable or necessary under certain conditions will raise this space to 572 square feet; or a room at least 22' x 26'. This makes 3.81 square feet per person served, based on 150 persons.</p> <p>In addition (see 500 level).</p> <p>Dining room (see 500 level).</p>	

See footnotes at end of table.

Schools Serving 150 to 250 Persons

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS		
<i>Range, ovens, etc.</i>		
Range-----	A 2-section heavy-duty range, with ovens; or two 4- to 6-burner institutional stoves with ovens.	
Ovens-----		A small 3-deck oven.
Other-----		A 2-compartment steam cooker; or a 15- to 20-gallon steam-jacketed kettle.
<i>Sinks, etc.</i>		
Vegetable preparation sink-----	A 2-compartment sink, each compartment 18" x 18" x 12".	
Dishwashing sink-----	A 3-compartment sink, each compartment 20" x 20" x 14".	See <i>Dish machine</i> , below.
Hand basin-----	One 15" x 12".	
Mop sink-----	One 24" x 20" x 14" (provided there is no janitor's sink near).	
Cook's sink-----		A small sink in cook's table 15" x 15" x 9".
Hose connection-----		Near platform.
<i>Dish machine, etc.</i> -----		Single tank size with racks 20" x 20" with rinsing facilities. (This would replace the dishwashing sinks above.)
<i>Refrigerators</i>		
Refrigerator-----	45 cubic feet (56" x 35" x 74"), plus milk storage; or 60 cubic feet.	Replace reach-in refrigerator with walk-in box 6' x 6'.
Ice cream cabinet-----		10 to 15 gallon capacity.
Frozen food cabinet-----		And/or as needed.
<i>Tables</i>		
Receiving table ¹ -----	4' x 24", 28" high-----	Up to 5'.
Cook's table-----	6' x 30", 36" high-----	Up to 8'.
Salad and sandwich table.	4' to 6' x 30", 36" high-----	Up to 6', and add a bakery table 4'.
Soiled dish table-----	13½ square feet (6' x 27")-----	Up to 20 square feet.
Clean dish table-----	8 square feet (4' x 24")-----	Up to 14 square feet.
Truck-----	One 30" x 22", 28" high, with 2 shelves.	Up to 2.
<i>Counter, etc.⁴</i>		
Counter-----	8' to 10' long and 27" to 30" wide.	Up to 14' (which will make room for hot and cold units). May need a separate table for trays and silver, and one for cashier's use.
Tray rail-----	8' to 10' long x 12" wide (if trays are used).	Length of counter.

See footnotes at end of table.

Schools Serving 150 to 250 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS—continued		
<i>Kitchen machines</i>		
Mixer-----	12-quart size-----	Up to 20-quart size. 8 to 10 pounds. Small size. Table model.
Peeler-----		
Meat slicer-----		
Food cutter-----		
Cabinet base for mixer.	Cabinet table 18" x 24", with storage for attachments.	
<i>Storage</i>		
Dish cabinets-----	Under counter, preferably closed with sliding doors.	Up to 18 square feet shelf space.
Pots and pans-----	Shelves under and over tables. Pot hooks.	Portable pan rack.
Small equipment-----	Four table drawers 20" x 20" x 4".	Up to 6 table drawers.
Dish baskets or racks	Shelf under clean dish table.	
Paper goods-----	Shelf or cabinet, 3 square feet.	
Soaps and cleaners-----	Separate cabinet, 6 square feet.	
Staple food supplies-----	Separate storage room, 50 to 60 square feet, with shelves, wire mesh bins and cans on portable platforms. ³	Up to 100 square feet.
<i>Small equipment and tableware.</i>	See list available from your State Department of Education, and <i>School Lunch Management</i> (Nutrition Education Series, Pamphlet No. 3, U. S. Office of Education. For sale by Superintendent of Documents, Washington 25, D. C., 10 cents).	
<i>Manager's desk, etc.</i>		
Desk-----	30" x 24", with at least 1 file drawer.	
Chair-----	1-----	
Stools-----	1 or 2-----	
HOT-WATER FACILITIES	See statement in general suggestions page 4, and plan space as needed.	
REST ROOMS-----	Lavatory, toilet, and locker facilities to accommodate workers. (Provide if no rest room is near.)	

See footnotes at end of table.

Schools Serving 150 to 250 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
SPACE CONSIDERATIONS.	<p>Minimum space for serving 250 to include all the minimum facilities will require about 529 square feet; or a room 23' x 23'. This is equal to 2.12 square feet per person served.</p> <p>Ample space for including additional facilities that might be desirable or necessary under certain conditions will raise this space to 690 square feet; or a room 23' x 30', which makes 2.76 square feet per person served, based on 250 persons.</p> <p>In addition (see 500 level). Dining room (see 500 level).</p>	

Schools Serving 250 to 350 Persons

EQUIPMENT NEEDS		
<i>Ranges, ovens, etc.</i>		
Range-----	A 2-section heavy duty range with oven.	
Oven-----	A small 2- to 3-deck oven-----	Large deck oven (if much baking is to be done).
Steam cooker-----		A small size, 2 compartments; or
Steam-jacketed kettle.		A 20- to 25-gallon size.
<i>Sinks, etc.</i>		
Vegetable preparation sink.	Two compartments, each 24" x 20" x 12", with at least 1 drain board 30" x 20".	Another drain board (may be portable).
Cook's sink-----		One sink in cook's table 15" x 15" x 9".
Pot sink-----		A 3-compartment sink for pot washing, 24" x 20" x 14" with drain board.
Hand basin-----	One 15" x 12"	
Mop sink-----	One 24" x 20" x 14"	
Hose connection-----	Near platform-----	
Dish machine-----	Single tank size with racks 20" x 20" and with rinsing facilities (may be sink with force attachment).	A timing device attached to the machine.
<i>Refrigerators</i>		
Refrigerator-----	60 cubic foot (82" x 33" to 35" x 74") plus milk storage; or walk-in box 6' x 6'.	15- to 20-gallon capacity.
Ice cream cabinet.		And/or as needed.
Frozen food cabinet		

Schools Serving 250 to 350 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS— continued		
<i>Tables</i>		
Receiving table ⁵ —	5' x 24", 28" high-----	Up to 6'.
Pre-preparation of vegetables table.	4' x 24", 28" high, if worker sits to prepare vegetables; 36" high, if worker stands.	Up to 6'.
Cook's table-----	6' x 30", 36" high-----	Up to 8'.
Bakery table-----	3½" x 30", 36" high-----	Up to 5'.
Salad and sandwich table.	6' x 30", 36" high-----	Up to 7'.
Soiled dish table-----	20 sq. ft. (8' x 30")-----	Up to 25 square feet.
Clean dish table-----	15 sq. ft. (6' x 30")-----	Up to 18 square feet.
Truck-----	One 30" x 22", 28" high, with 2 shelves.	Up to 2 or 3.
<i>Counter, etc.⁴</i>		
Counter-----	10' long x 27" to 30" wide-----	Up to 15', which will make room for hot and cold units. May need a separate table for trays and silver and one for cashier's use.
Tray rail-----	10' long x 12" wide (if trays are used).	Length of counter.
Tray and silver-----		Table or portable truck (if space is not provided on counter).
<i>Kitchen machines, etc.</i>		
Mixer-----	Table model, 20 quarts-----	
Peeler-----	15 pounds-----	
Meat slicer-----		Small table model (electric).
Food cutter-----		Table model, 14" bowl.
Cabinet base for mixer.	Cabinet table 18" x 24", with storage for attachments.	Additional table space, if needed to hold machines.
<i>Storage</i>		
Dish cabinets-----	Under counter, preferably closed with sliding doors.	Separate closed cabinet.
Pots and pans-----	Shelves, under and above tables. Pot hooks.	Up to 27 square feet. Portable utensil and pan racks.
Small equipment-----	Six table drawers-----	Up to 8-table drawers.
Dish racks-----	Shelf under dish table-----	
Paper goods-----	Enclosed space apart from food, 4 square feet.	Separate cabinet.
Soaps and cleaners-----	Enclosed separate space apart from food, 10 square feet (if soap is bought in barrels).	

See footnotes at end of table.

Schools Serving 250 to 350 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS— Continued		
<i>Storage</i> —Continued Staple food supplies	Separate storage room, 60 to 70 square feet fitted with bins, shelves, cans on portable platforms. At least 1 wire mesh bin for root vegetables. ³	Up to 120 square feet.
<i>Small equipment and tableware.</i>	See list available from your State Department of Education; and <i>School Lunch Management</i> (Nutrition Education Series, Pamphlet No. 3, U. S. Office of Education. For sale by Superintendent of Documents, Washington 25, D. C., 10 cents).	
<i>Manager's desk, etc.</i> Desk-----	30" x 27", with at least 1 file drawer.	
Chair-----	2-----	
Stool-----	2-----	Up to 4.
HOT WATER FACILITIES	See statement in general suggestions, page 4, and plan space as needed.	
REST ROOMS-----	Lavatory, toilet, and locker facilities to accommodate workers. (Provide if no rest room is near.)	
SPACE CONSIDERATIONS	<p>Minimum space for including all the minimum facilities for serving 350 will require about 600 square feet; or a room 23' x 26' which amounts to 1.71 square feet per person served.</p> <p>Ample space for including the additional facilities that might be desirable or necessary under certain conditions will raise this space to 1,080 square feet; or a room 30' x 36' which makes 3.1 square feet per person served, based on 350 persons.</p> <p>In addition (see 500 level).</p> <p>Dining room (see 500 level).</p>	

See footnotes at end of table.

Schools Serving 350 to 500 Persons

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS		
<i>Ranges, ovens, etc.</i>		
Range-----	A 2-section heavy-duty range with ovens.	A full-size spreader-plate between range sections.
Oven-----	A small 3-deck oven-----	A large 3-deck oven.
Steam cooker-----	A 2-compartment small steam cooker; or	Same.
Steam-jacketed kettle.	A full-jacketed kettle of 25-gallon capacity, 30" diameter.	Same.
<i>Sinks, etc.</i>		
Vegetable preparation sink.	A 2-compartment sink, each compartment 20" x 20" x 14", with 1 drain board 30" x 20".	Another drain board (may be portable).
Cook's sink-----		One sink in cook's table, 15" x 15" x 9"; or in bakery if there is no sink near.
Pot sink-----	A 2-compartment sink, each compartment 24" x 20" x 14", with 1 drain board 30" x 20".	Another compartment and drain board.
Hand basin-----	One 15" x 12"	
Mop sink-----	One 24" x 20" x 14"	
Hose connection-----	Near platform-----	
<i>Dish machine</i> -----	Single tank machine with racks 20" x 20".	Or an automatic machine.
<i>Refrigerators</i>		
Refrigerator-----	Two 45-cubic-foot boxes, plus milk storage; or 1 walk-in box 6' x 8'.	Up to a walk-in size 8' x 10', plus 30-cubic-foot reach-in box.
Ice cream cabinet-----		Up to 20 gallons.
Frozen food cabinet-----		As needed.
<i>Tables</i>		
Receiving table ⁵ -----	6' x 24", 28" high-----	Up to 8'.
Table for preparation of vegetables.	5' x 30", 28" to 36" high-----	Up to 7'.
Cook's table-----	7' x 30", 36" high-----	Up to 9'.
Bakery table-----	4' 6" x 30", 36" high-----	Up to 6'.
Salad and sandwich table.	6' x 30", 36" high-----	Up to 7'.
Soiled dish table-----	25 square feet (10' x 30")-----	Up to 30 square feet.
Clean dish table-----	15 square feet (6' x 30")-----	Up to 20 square feet.
Truck-----	One 30" x 22", 28" high with 2 shelves.	Up to 3.
<i>Counter, etc.⁴</i>		
Counter-----	15' long x 27" to 30" wide.	Up to 20', with hot and cold units.
Tray rail-----	15' long x 12" wide (if trays are used).	Length of counter.
Cashier's table-----	Modify end of counter or provide table 30" x 20".	
Trays and silver-----	Table or portable truck (if not room on counter).	

See footnotes at end of table.

Schools Serving 350 to 500 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
EQUIPMENT NEEDS—continued		
<i>Kitchen machines, etc.</i>		
Mixer-----	20- to 30-quart pedestal type.	
Peeler-----	15-pound-----	
Meat slicer-----		
Food cutter-----		
Cabinet base for machines.		
<i>Storage</i>		
Dish cabinets-----	Under counter, preferably closed with sliding doors, plus separate cabinet.	
Pots and pans-----	Shelves under and above tables. Pot hooks.	
Small equipment-----	Six table drawers-----	Portable utensil and pot racks.
Dish racks-----	Shelf under dish table-----	Up to 8 table drawers.
Paper goods-----	Enclosed space apart from food, 4 square feet.	Separate cabinet.
Soaps and cleaners-----	Enclosed separate space apart from food, 10 square feet.	
Staple food supplies-----	Separate storage room, 70 to 90 square feet fitted with bins, shelves, cans on portable platforms. At least 1 wire mesh bin for root vegetables. ³	Up to 140 square feet.
<i>Small equipment and tableware.</i>	See list available from your State Department of Education; and <i>School Lunch Management</i> (Nutrition Education Series, Pamphlet No. 3, U. S. Office of Education. For sale by Superintendent of Documents, Washington 25, D. C., 10 cents).	
<i>Manager's desk, etc.</i>		
Desk-----	36" x 30", with at least 1 file drawer.	
Chair-----	2-----	
Stool-----	3-----	Up to 6.
HOT-WATER FACILITIES	See statement in general suggestions, page 4, and plan space as needed.	
REST ROOMS-----	Lavatory, toilet, and locker facilities to accommodate workers. (Provide if no rest room is near.)	

See footnotes at end of table.

Schools Serving 350 to 500 Persons—Continued

Item	Description and size	
	Minimum requirements	Additions which may be desirable under certain conditions
SPACE CONSIDERATIONS	<p>Minimum space for including all the minimum facilities for serving 500 will require about 780 square feet of space; or a room 26' x 30', which makes 1.56 square feet per person served.</p> <p>Ample space for including the additional facilities that might be desirable or necessary under certain conditions will raise this space to 1,216 square feet; or a room 32' x 38', which makes 2.43 square feet per person served, based on 500.</p> <p>NOTE.—In addition, a platform at rear entrance and enclosed space for holding empty crates and containers and temporary storage of trash and garbage should be provided.</p> <p>Dining room space averages 9 to 12 square feet for each person to be seated at one time.</p>	

¹ Should include space for scales and inspection. In rural areas this space might be enlarged to include a table and sink for rough preparation of vegetables.

² A glass protector for counter is required by law in some States. When a plate lunch is served from a small window this is not necessary.

³ This amount of space will provide ample storage for a *variety* of foods purchased periodically. The *minimum* storage space is consistent with good purchase practices for a limited menu. The *desirable increase* in space allows for the purchase of food in greater variety. (It will not provide space for a year's supply of processed foods.)

⁴ A glass protector for counter is required by law in some States.

⁵ Should include space for scales and inspection.

